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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: KIPPIE, David P.

Group Art Unit: 1712

Serial No.: 10813314

Examiner: John J. Figueroa

Confirmation No.: 3626

Atty. Dkt. No.: PA-00404US

Filed: 03/30/2004

For: MONOVALENT CATION CONTAINING WELL
FLUIDS

RESPONSE TO NON-FINAL OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

INTRODUCTORY COMMENTS:

The following is in response to the Non-Final Office Action mailed 5/04/2006, for which the three-month date for response is 8/4/2006.

Applicants hereby request a one-month extension of time pursuant to 37 C.F.R. 1.136(a). The Commissioner is authorized to deduct the required one-month extension of time fee or any other necessary fees, from Deposit Account No. 13-3082, Order No. PA-00404US.

AMENDMENTS TO THE CLAIMS:

Please amend the specification as indicated below:

1. (currently amended) A monovalent cation containing well fluid comprising: an aqueous monovalent brine system ~~brine containing at least 0.6 equivalents per liter of a water soluble monovalent cation salt and which is substantially free of divalent cation salt~~; and an amount of a starch derivative selected such that the well fluid has the following characteristics: (a) a low shear rate viscosity greater than about 5,000 centipoise; (b) a high shear rate viscosity at 511 sec⁻¹ in the range from about 15 to about 70 centipoise measured at 120°F, wherein the aqueous monovalent brine system consists essentially of at least 0.6 equivalents per liter of a water soluble monovalent cation salt, wherein the anion of the salt is a halide, wherein the monovalent cation salt is substantially free of divalent cations, and wherein the well fluid is substantially free of xanthan gum.

2. (currently amended) The well fluid of claim 1, wherein the starch derivative comprises a pre-gelatinized crosslinked amylopectin starch which has been crosslinked to about 25% to about 60% of the maximum attainable viscosity ~~the extent that the viscosity of a basic aqueous amylopectin starch suspension undergoing crosslinking is within about 25% to less than about 50% of the maximum viscosity which can be obtained.~~

3. (original) The well fluid of claim 1, further comprising a particulate bridging agent which is substantially insoluble in the aqueous brine.

4. (currently amended) A method of treating a well that comprises: adding a well fluid comprising a monovalent aqueous brine system ~~containing at least 0.6 equivalents per liter of a water soluble monovalent cation salt and which has less than 0.6 equivalents of divalent cation salt~~; and an amount of a starch derivative selected such that the well fluid has the following characteristics: (a) a low shear rate viscosity greater than about 5,000 centipoise; (b) a high shear rate viscosity at 511 sec⁻¹ in the range from about 15 to about 70 centipoise measured at 120°F to the well; and causing the ~~monovalent aqueous brine~~ well fluid to travel through at least a portion

of the well, wherein the monovalent aqueous brine system consists essentially of at least 0.6 equivalents per liter of a water soluble monovalent cation salt, wherein the anion of the salt is a halide, wherein the monovalent cation salt is substantially free of divalent cations, and wherein the well fluid is substantially free of xanthan gum.

5. (original) The method of claim 4, wherein the fluid further comprises a particulate bridging agent which is substantially insoluble in the aqueous brine.

6. (currently amended) A monovalent cation containing well fluid comprising: an aqueous monovalent brine system containing at least 0.6 equivalents per liter of a water soluble monovalent cation salt and less than 0.6 equivalents per liter of a water soluble divalent cation salt; and a viscosifying agent including a starch derivative, wherein the starch derivative is a pre-gelatinized crosslinked amylopectin starch which has been crosslinked to about 25% to about 60% of the maximum attainable viscosity the extent that the viscosity of a basic aqueous amylopectin starch suspension undergoing crosslinking is within about 25% to less than about 50% of the maximum viscosity which can be obtained, wherein the aqueous monovalent brine system consists essentially of at least 0.6 equivalents per liter of a water soluble monovalent cation salt, wherein the anion of the salt is a halide, wherein the monovalent cation salt is substantially free of divalent cations, and wherein the well fluid is substantially free of xanthan gum.

7. (canceled)

8. (canceled)

9. (new) The monovalent cation containing well fluid of Claim 2, wherein the pre-gelatinized crosslinked amylopectin starch comprises less than 10 wt% amylase.



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10. (new) The monovalent cation containing well fluid of Claim 6, wherein the pre-gelatinized crosslinked amylopectin starch comprises less than 10 wt% amylase.

REMARKS:**REMARKS REGARDING CLAIMS AMENDMENTS:**

Claims 2 and 6 have been amended to further clarify the recited extent of crosslinking in terms of maximum attainable viscosity. Support for these amendments may be found at numbered paragraph [0019] of the application as filed. Claims 1, 4, and 6 have been amended to further clarify that the previously recited aqueous brine is an aqueous monovalent brine system, which consists essentially of at least 0.6 equivalents per liter of a water soluble monovalent cation salt, wherein the anion of the salt is a halide, and wherein the monovalent cation salt is substantially free of divalent cations. Support for these amendments may be found in numbered paragraphs [0008], [0040], and in the claims as originally filed.

Claims 1, 4, and 6 have also been amended to include the limitations recited in Claims 7 and 8. Accordingly, Claims 7 and 8 have been canceled.

New claims 9 and 10 have been added to further limit the amylopectin starch recited in Claims 2 and 6 respectively, to comprise less than 10 wt% amylase. Support for these amendments may be found in numbered paragraph [0021] of the application as filed. No new matter has been added.

IN RESPONSE TO THE OFFICE ACTION:**REJECTION UNDER 35 U.S.C. § 112:**

Claims 2 and 6-8 have been rejected under 35 U.S.C. §112, second paragraph. Claims 2 and 6 have been amended to further clarify that the pre-gelatinized crosslinked amylopectin starch has been crosslinked to about 25% to about 60% of the maximum attainable viscosity. Accordingly, the claims, as amended, particularly point out and distinctly claim the subject matter which applicants regard as their invention.

Applicant submits that the above amendment obviates the rejection of the claim under 35 U.S.C. § 112, second paragraph, and thus ask that the Examiner reconsider and withdraw the rejection of the claim and indicate allowance in the next paper from the Office.

REJECTION UNDER 35 U.S.C. § 102:

Claims 1-7 have been rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,804,535 to Dobson et al. (Dobson.) Dobson is alleged to disclose a well drilling fluid and a process for increasing low shear rate viscosity using a pre-gelatinized amylopectin starch derivative. In response, Applicant requests that the Examiner reconsider and withdraw the rejection in view of the following.

For there to be anticipation under 35 U.S.C. § 102, "each and every element" of the claimed invention must be found either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) and references cited therein. See also *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 1571, 230 U.S.P.Q. 81, 84 (Fed. Cir. 1986) ("absence from the reference of any claimed element negates anticipation."); *In re Schreiber*, 128 F.3d 1473, 1477, 44 U.S.P.Q.2d 1429, 1431 (Fed. Cir. 1997). As pointed out by the court, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). An anticipating reference must describe the patented subject matter with sufficient clarity and detail to establish that the subject matter existed and that its existence was recognized by persons of ordinary skill in the field of the invention. *ATD Corp. V. Lydall, Inc.*, 159 F.3d 534, 545, 48 U.S.P.Q. 2d 1321, 1328

(Fed. Cir. 1998). See also *In re Spada*, 911 F.2d 705, 708, 15 U.S.P.Q. 2d 1655, 1657 (Fed. Cir. 1990).

Dobson is generally directed to a well drilling and servicing fluid comprising a brine having dissolved therein a formate salt selected from the group consisting of potassium formate, cesium formate, and mixtures thereof. Preferred embodiments of Dobson include xanthan gum as a viscosifier. In contrast, Applicants recite an aqueous monovalent brine system that consists essentially of at least 0.6 equivalents per liter of a water soluble monovalent cation salt, wherein the anion of the salt is a halide, wherein the monovalent cation salt is substantially free of divalent cations, and wherein the well fluid that is substantially free of xanthan gum.

As Examiner admits, Dobson fails to disclose or suggest Applicants' recited high shear rate viscosity. Dobson also fails to disclose or suggest a brine system that consists essentially of a monovalent cation salt wherein the anion of the salt is a halide. In fact, Dobson requires the brine to contain potassium or cesium formate. Dobson also fails to disclose or suggest a well fluid that is substantially free of xanthan gum, but instead discloses preferred embodiments which include xanthan gum. As such, Dobson fails to disclose a well fluid having all the limitations recited by Applicants. Accordingly, Dobson cannot reasonably be found to anticipate Applicants' presently claimed invention.

In view of the above, Applicant requests the reconsideration and withdrawal of the rejection of claim 1-7 under 35 U.S.C. §102 and ask that the Examiner indicate the allowance of the claims in the next paper from the Office.

REJECTION UNDER 35 U.S.C. § 102:

Claims 1-2, 4, and 6 have been rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 6,420,319 to Estes et al. (Estes.) Estes is alleged to disclose a method for treating wells using a drilling fluid composition containing an amylopectin waxy maize starch and xanthan gum in NaCl brine.

In the interest of brevity, Applicant requests that the Examiner note the case law previously present and that it be treated as having been recited herein.

Estes discloses and exemplifies well fluids wherein starch derivatives comprising amylopectin are combined with xanthan gum. In contrast, Applicants recite a well fluid which is substantially free of xanthan gum. Accordingly, Estes fails to disclose or suggest Applicants' presently claimed invention.

In view of the above, Applicant requests the reconsideration and withdrawal of the rejection of claims 1-2, 4, and 6 under 35 U.S.C. §102 and ask that the Examiner indicate the allowance of the claims in the next paper from the Office.

REJECTION UNDER 35 U.S.C. § 103:

Claim 8 has been rejected under 35 U.S.C. §103(a) as being unpatentable given U.S. Patent No. 6,420,319 to Estes et al. (Estes.).

Applicant requests that the Examiner reconsider and withdraw the above rejection of the claims in view of the following.

Applicant requests that the Examiner reconsider and withdraw the above rejection of the claims in view of the following.

A determination under 35 U.S.C. §103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *In re Mayne*, 104 F.3d 1339, 1341, 41 U.S.P.Q. 2d 1451, 1453 (Fed. Cir. 1997). An obviousness determination is based on underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 U.S.P.Q. 459, 467 (1966), see also *Robotic Vision Sys., Inc. v. View Eng'g Inc.*, 189 F.3d 1370, 1376, 51 U.S.P.Q. 2d 1948, 1953 (Fed. Cir. 1999).

In line with this standard, case law provides that "the consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art." *In re Dow Chem.*, 837 F.2d 469, 473, 5 U.S.P.Q. 2d 1529, 1531 (Fed. Cir. 1988). The first requirement is that a showing of a suggestion, teaching,

or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." *C.R. Bard, Inc. v. M3 Sys. Inc.*, 157 F.3d 1340, 1352, 48 U.S.P.Q. 2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." *In re Dembiczak*, 175 F.3d 994, 1000, 50 U.S.P.Q.2d 1614, 1617. The second requirement is that the ultimate determination of obviousness must be based on a reasonable expectation of success. *In re O'Farrell*, 853 F.2d 894, 903-904, 7 U.S.P.Q. 2d 1673, 1681 (Fed. Cir. 1988); see also *In re Longi*, 759 F.2d 887, 897, 225 U.S.P.Q. 645, 651-52 (Fed. Cir. 1985). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Fritch*, 972 F.2d 1260, 1265, 23 U.S.P.Q. 2d 1780, 1783-84 (Fed. Cir. 1992).

The Examiner bears the burden of establishing a prima facie case of obviousness. *In re Deuel*, 51 F.3d 1552, 1557, 34 U.S.P.Q. 2d 1210, 1214 (Fed. Cir. 1995). The burden to rebut a rejection of obviousness does not arise until a prima facie case has been established. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q. 2d 1955, 1957 (Fed. Cir. 1993). Only if the burden of establishing a prima facie case is met does the burden of coming forward with rebuttal argument or evidence shift to the applicant. *In re Deuel*, 51 F.3d 1552, 1553, 34 U.S.P.Q. 2d 1210, 1214 (Fed. Cir. 1995), see also *Ex parte Obukowicz*, 27 U.S.P.Q. 2d 1063, 1065 (B.P.A.I. 1992).

The limitations of Claim 8 have been incorporated into Claims 1 and 6. As Examiner admits, Estes fails to disclose a drilling fluid containing less than 0.25 lbs/bbr of xanthan gum. However, Examiner contends that an amount of xanthan gum less than 0.25 lbs/bbr would be an obvious variant of the disclosure. Applicants respectfully disagree. In numbered paragraph [0036], Applicants disclose the novel and unexpected discovery that the instant well fluid demonstrates excellent suspension characteristics to the fluids at the low viscosities in the absence of a viscosifier. Applicants then disclose that preferred embodiments of the instant disclosure are substantially free of xanthan gum. This discovery is in contrast to the general knowledge available in the art, in which a combination of starch and xanthan gum is believed to be necessary to obtain well fluid properties of Applicants' presently claimed invention (see numbered paragraph [0037].) Accordingly, Applicants' presently claimed invention runs counter

to the general knowledge known in the art. Applicants' presently claimed invention thus represents a novel and non-obvious discovery, which the cited reference fails to disclose or suggest. In fact, at Col. 2, lines 52-60 Estes specifically states:

"[t]he starch derivative according to the present invention, when combined with xanthan gum ...decreases fluid loss in the well being treated and improves the suspension characteristics thereof..."

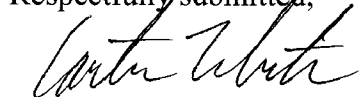
Estes thus discloses that the improvements are a result of the combination of the starch derivative and the xanthan gum. As such, Estes actually teaches away from Applicants presently claimed invention wherein the well fluid is substantially free of xanthan gum.

Given the above, Applicant requests that the rejection of claim 8 under 35 U.S.C. §103(a) be reconsidered and withdrawn and that the Examiner indicate the allowance of the claims in the next paper from the Office.

The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 13-3082, Order No. PA-00404US.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner should directly contact the undersigned by phone to further the discussion.

Respectfully submitted,



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Date:

4/25/06